

THE *Second* ④
Boate Swaines Art,
OR,
The compleat Boat Swaine.

Wherein is shewed a true proportion for the
Masting, Yarding, and Rigging of any Ship, whose
Length, Breadth, and Depth is knowne: with Rules
for the sizes and lengths of all sorts of Rigging
that belongs to any Ship.

Also the use of an opening Scale, that if the length of
the maine Mast be put upon it with a paire of Compasses,
you may measure upon the scale, the lengths and
thicknesse of all the other Masts and Yards; and
also the sizes, the lengths, and the number of
Fathomers of every size, for the Rigging of
any Ship, without altering the scale.

By *Henry Bond*, teacher of Navigation, Surveighing, and other
parts of the Mathematicks, in the *Bulwarke* near
the Tower. *W. H. R.*

The scale is made in Brasse by *Thomas Flowre* at the Dyall in
the Bulwarke: and in Wood by *Robert Bissaker* at Rat-
cliffe over against the Red Lyon Taverne.

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are to be sold at his shop at the Posterne Gate neere
the Tower. 1642.



To the Reader.



Ourteous and Iudicious Reader,
thou hast here presented to thee, an
exact method and direction, for
the Mastling, Yarding, and Rig-
ging of any Ship whatsoever : All that is ex-
pected from thee, is but thy acceptance, and a
Charitable censure, both which out of doubt
thou wilt freely grant : the maine end that is
intended in it, is for the helpe and direction
of young men, that are willing to have some
ground, for what they shall undertake in this
kind, and not to goe on hand over head. If
any shall reape any benefite by it (as out of
doubt many will) the Author hath his desire.
Vale.



A Table of the lengths and thicknesse of the Mastes and Yards of a Ship that

is 75. foote by the Keele 29 1/2 foote at

the Beame, and 12. foote in Hold,

which is of the Burthen

of 300. Tunne.

Length
in feet
thicknes
in inches



The Spritsaile Topsaile Yard	14	4
The fore Topgallant Yard, and the Spritsaile Topmast	16	5
The maine Topgallant Yard	18	6
The fore Topgallant Mast	19	6
The Mizon Topsaile Yard	20	6
The maine Topgallant Mast	21	7
The mizon Topmast	27	8
The fore Topsaile Yard	31	9
The maine Topsaile yard, 11 inches & crosse jeck yard	36	7 1/2
The fore Topmast	37	13
The maine Topmast	42	14
The Spritsaile Yard	50	16
The mizon Mast	52	17
The mizon Yard	51	16
The fore Yard	62	20
The Bousprite	66	22
The maine Yard	74	24
The fore Mast	75	25
The maine Mast	84	28

A Table of the names, the sizes, the number, and the lengths, of each Rope of Rigging, belonging to the fore propounded Ship.

1. Cordidge of one Inch and $\frac{1}{2}$ parts.		Fa. Pa.
2 Fore Topgallant Braces		25 50
4 Fore Topgallant Bowling Bridles		4 4
2 Fore Topgallant Lifts		22 44
8 Maine Topgallant Lanniards		12 12
4 Maine Topgallant Bowling Bridles		1 4
1 Maine Flag-staffe stay		11 11
8 Mizon Topmast Lanniards		1 12
1 Fall of the Mizon Topsaile Cranlines		36 36
2 Mizon Topsaile Bowlings		12 25
2 Mizon Topsaile Braces		17 34
34		232

2. Cordidge of one Inch $\frac{1}{3}$ parts.		
8 Lanniards of the Spritsaile Topmast		1 12
2 Falles of the Spritsaile Topmast Takles		6 12
1 Fall of the Spritsaile Cranlines		18 18
1 Spritsaile Topsaile Halliards		6 6
2 Spritsaile Topsaile Lifts		5 10
2 Pennants of the Spritsaile Topsaile Braces		2 2
2 Spritsaile Topsaile Braces		10 20
2 Spritsaile Topsaile Cluelynes		10 20
2 Fore Topmast Takle Fales		13 27
2 Falles of the fore Topgallant Backstaies		18 36
1 Fore Topgallant Halliards		32 32
2 Pennants of the fore Topgallant Braces		3 3
2 Fore Topgallant Bowlings		24 48
2 Fore Topgallant Cluelynes		22 44
6 Fore Topgallant Lanniards		1 9
2 Falles of the maine Topgallant Takles		7 14
39		2 Falles

2	Falles of the maine Topgallant Backstaies	20	40
2	Maine Topgallant lifts	24	48
2	Maine Topgallant Braces	28	56
2	Maine Topgallant Bowlings	24	48
8	Mizon Brailes	8	64
2	Mizon Topmast Takle Falles	9	18
1	Fall of the mizon Topsaile Cranlynes	36	36
6	Mizon Topsaile Bowling Bridles	6	6
2	Pennants of the mizon Topsaile braces	2	2
2	Crosse Jeck Braces	20	40
2	Fore Topsaile Leech lynes	10	20
31		691	

3. Cordidge of one inch $\frac{1}{16}$ parts.

2	Lanniards of the Spritsaile standing Lifts	6	6
4	Fore Martlynes Legs	22	22
2	Lanniards of the Hosses for the fore yard	6	12
8	Lanniards for the fore Topmast Shrowdes	2	16
2	Fore Topsaile Braces	23	47
4	Fore Topsaile Bowling Bridles	2	8
2	Fore Topgallant Parrell Ropes	2	2
10	Lanniards of the maine Topmast Shrowdes	2	35
2	Maine Topsaile Braces	24	48
2	Maine Topsaile leech lines	12	24
2	Maine Topgallant Cluelynes	25	50
2	Pennants of the maine Topgallant Braces	2	2
10	Lanniards for the mizon Shrowdes	2	25
2	Pennants of the Crosse Jeck Braces	3	3
2	Slings for the Crosse Jeck yard	3	3
2	Pennants of the Mizon Topsaile Cranlines	2	2
1	Mizon Topsaile Halliards in 3 parts	28	28
2	Mizon Topsaile Cluelynes	14	28
61		351	

4. Cordidge of 2. inches 7 parts.

	F. R.
2 Spritsaile Braces	16 32
2 Spritsaile Cluelynes	11 23
1 Spritsaile Buntlyne in 2 parts	21 21
8 Spritsaile Topmast Shroudes	3 24
2 Pennants of the Spritsaile Topsaile Takles	2 2
3 Pennants of the Spritsaile Topsaile Cranlynes	8 8
10 Puttox of the Spritsaile Topmast Shroudes	10 10
2 Spritsaile Topmast Parrell Ropes	2 2
2 Foresaile martlyns Falles	29 38
5 Foresaile Buntlynes	16 80
2 Fore Braces	15 30
2 Fore Topsaile Lifts	18 36
2 Falles of the fore Topmast Backstaies	4 9
2 Pennants of the fore Topsaile Braces	3 3
1 Lanniard of the fore Topmasts Stay	5 5
2 Fore Topsaile Bowlings	26 32
2 Fore Topsaile Buntlynes	10 20
2 Pennants of the fore Topgallant Backstaies	4 4
1 Fore Topgallant Tye	3 3
8 Fore Topgallant Puttox	8 8
3 Fore Topgallant Stay	18 18
1 Fore Topgallant Top-rope	27 27
6 Fore Topgallant Shrowdes	3 24
4 Mainsaile Martlynes Legs	32 32
2 Falles of the main Topmast Takles	15 31
2 Lanniards of the main Topmast backstaies	5 10
2 Mayne Topsaile Lifts	24 49
2 Mayne Topsaile Buntlynes falles	17 35
2 Mayne Topsaile Buntlynes Legs	17 19
2 Pennants of the Mayne Topgallant Takles	12 12
2 Pennants of the Mayne Topgallant Backstaies	4 4
1 Mayne Topgallant Halliards	37 37
10 Mayne Topgallant Puttox	13 13
98	2 Maine

Pa. Pa.

2	Maine Topgallant parrell Ropes	2	11 12
2	Falles of the Mizon Takles	16	32
1	Mizon Trusse	12	12
1	Mizon Bowling	5	10
2	Pennants of the Mizon Topmast Takles	2	12
8	Mizon Topmast Shrowdes	4	36
1	Mizon Topmast Tye	4	4
10	Puttox of the Mizon Topmast Shrowdes	15	15
2	Mizon Topmast Parrell Ropes	2	2

29 838 1/2

5. Cordidge of 2 inches \div parts.

1	Spritfaile Topmast Tye	3	3
2	Maine faile Martlines Falles	32	64
2	Maine Braces	24	48
8	Maine Topgallant Shroudes	4	32
2	Spritfaile Garnets	18	36
2	Spritfaile Liftes	18	36
2	Pennants of the Spritfaile Braces	2	12
2	Spritfaile sheetes	17	34
1	Holle for the stay	6	6
2	Fore Topsaile Clue garnets	15	30
2	Foresaile Bowling Bridles	4	4
2	Pennants of the fore Braces	4	4
1	Lanniard of the fore Topmast stay	4	4
2	Falles of the fore Topmast running backe stayes	17	34
2	Fore Topmast Parrell ropes	3	3
1	Fore Topmast brest rope	2	2
6	Maine faile Buntlines	2	34
1	Maine Luffe Takle	8	8
1	Falle of the Maine faile buntlines	54	54
1	Maine Bousing Takle	8	8
2	Lanniards of the maine Yard Holfes	6	6
2	Falles of the maine Topmast running backe failes	19	39
2	Maine Topmast Parrell Ropes	4	4

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I Maine

The Boat-Swaines Art.

	<i>FaFa.</i>
1 Maine Topgallant mast Stay	14 14
1 Maine Topgallant Top Rope	30 30
1 Mizon Tack	20 20
2 Crosse Jack liftes	15 30
1 Mizon Topmast Top rope	13 13
16 Lanniards of the fore throwdes	4 64
2 Fore Topsaile Clue lines	30 60
24	728
6. Cordidge of 3 inches $\frac{1}{16}$ parts.	
1 Spritsaile Halliards	17 17
2 Hosses for the Spritsaile shetts	3 3
2 Falles of the boats Takles for the foremast	32 64
2 Other Falles	22 44
2 Fore lifts	20 40
2 Fore Bowlings	15 30
2 Pennants of the fore Topmast Takles	4 4
2 Pennants of the fore Topmast running backstaies	3 6
8 Fore Topmast throwds	6 52
10 Fore Topmast Puttox	2 25
1 Fore Topmast Halliards	35 35
2 Falles of the boats Takles for the maine Mast	35 70
2 Other Falles	23 46
2 Mainelifts	24 48
2 Maine Clue garnets	18 36
2 Pennants of the maine braces	4 4
1 Lanniard of the maine Topmast Stay	5 5
1 Maine Topsaile Halliards	44 44
2 Pennants of the maine Topsaile braces	3 3
2 Maine Topsaile bowlings	27 54
6 Maine Topsaile bowling bridles	2 12
2 Maine Topsaile Cluelines	35 70
1 Maine Topgallant Tye	4 4
2 Runners of the mizon Takles	8 16
1 Mizon Halliards	19 19
1 Mizon sheete	13 13
63	764
	7 Cor-

7. Cordidge of 3 inches $\frac{7}{8}$ parts.

	Fa.	Pa.
2 Spritfaile standing Liffes	7	17
1 Fore Topmast Stay	12 $\frac{1}{2}$	12 $\frac{1}{2}$
2 Fore Topmast standing backstaies	15 $\frac{1}{2}$	31
1 Runner of the fore Topfaile halliards	12	12
20 Lanniards of the maine Shrowdes	4	80
2 Maine Bowlings	17	34
4 Maine Bowling Bridles	3	12
1 Maine garnet fall	29	29
2 Pennants of the maine Takles	4	4
10 Maine Topmast Shrowdes	7	70
2 Pennants of the maine Topmast backstaies	7	14
2 Maine Topmast standing backstaies	18	36
2 Pennants of the maine Topfaile Braces	4	4
1 Maine Topmast breast-rope	2 $\frac{1}{2}$	2 $\frac{1}{2}$
2 Pennants of the mizon Takles	4	4
1 Mizon Jeere	12	12
1 Mizon Parrell Rope	3	3
56		367

8. Cordidge of 3 inches $\frac{7}{8}$ parts.

1 Lanniard of the fore stay	5	5
10 Mizon Shrowdes	8	80
11		85

9. Cordidge of 4 inches $\frac{7}{8}$ parts.

1 Fore halliards	30	30
3 Fore Parrell Ropes	8	8
1 Luffe hooke Rope	7	7
2 Hoses for the fore Yard	6	6
1 Fall of the fore Topmast Top-Rope	18	18
1 Maine Garnet Guy	8	8
3 Maine Parrell Ropes	9	9
2 Hoses for the maine Yard	8	8
1 Runner for the maine Topfaile Halliards	14	14
1 Falle of the maine Top-Rope	21	21
10 Maine Topmast Puttox	3	30
1 Mizon Stay	9	9
		168

10. Cordidge of 4. inches $\frac{3}{4}$ parts.		Pa Pa.
2 Pennants of the Spritsaile sheetes	4	8
2 Foremast runners of the boats Takles	23	26
2 Other runners	12	25
2 Fore sheetes	25	50
1 Fore Topmast Tye	6	6
2 Maine Mast runners of the boats Takles	14	28
2 Other runners	13	26
1 Maine Topmast Stay	12	24
11. Cordidge of 5. inches $\frac{3}{4}$ parts.		182
2 Fore Topsaile sheetes	21	42
1 Lanniard of the maine stay	8	8
1 Maine Halliards	40	40
2 Maine Jecres	25	50
2 Maine sheetes	30	60
1 Pennant of the maine Garnet	5	5
1 Maine Topmast Tye	8	8
1 Mizon Tye	7	7
12. Cordidge of 5 inches $\frac{6}{12}$ parts.		220
1 Sling of the Spritsaile Yard	3	2
4 Pennants of the fore Takles	3	14
16 Fore shroudes	10	160
1 Fore Brest Rope	2	2
1 Coller of the fore stay about the Bousprit	3	3
1 Maine Brest Rope	3	3
2 Maine Topsaile sheetes	24	48
13. Cordidge of 6. inches $\frac{7}{12}$ parts.		232
8 Woldings for the Bousprit	5	40
1 Fore Tye	14	14
2 Fore Tacks	12	25
2 Pennants of the maine Takles	4	16
20 Maine shrouds	11	220
1 Pennant of the maine Topmast Toprope	6	6
14. Cordidge of 6. inches $\frac{1}{4}$ parts.		321
1 Maine Tye	13	13
2 Maine Tacks	15	30
20		43
		15 Car.

15. Cordidge of 10. inches.	$\frac{1}{2}$ parts.	12. 13
1 Fore stay		12 13
1 Coller about the Stem		5 5
1 Pennant of the maine winding Tackle		6 6
		23
16. Cordidge of 14. inches.		
1 Maine stay		16 16
4		

The first thing we will begin withall is to find the length of the mayne mast, for any ship whose length at the keele, the breadth at the beame, and the depth in hold is knowne, which is done two severall wayes: The first, which is the most Rationall way, is to adde the breadth and the depth of the ship together and double it, and divide the product by 3. and the quotient is the length of the Maine Mast in Pards. Example in the ship we have propounded, the breadth 29½; the depth 13 foote, those two added is 42½; the double of 42½ is 85; that divided by 3. the quotient is 28½ Pards: that is 85 foote: but we have propounded our Mast to be but 84 foote.

A second way is thus, adde the length of the keele, the breadth of the beame and the depth together, and to that Summe the difference betweene the breadth & twice the depth, and multiply the whole Sum by the breadth at the beame, and the product divide by the former whole Sum, and the quotient is the length of the Maine Mast in Pards. Example in the ship we have propounded, the length of the keele 75 foote, the breadth of the beame 29½ foote, and the depth 13 foote added together the Sum is 117½, unto which adde the difference betweene twice the depth 26 and the breadth 29½ which is 3½ and the whole Sum is 121, which multiplied by 29½ the breadth at the beame and the product is 3569½ which divided by 121. the former whole Sum the quotient is 29½ Pards, which is a pard more & better, then it was the other way, but it is too long, and therefore we commend the first way for the more Rationall way, and we perswade those that have occasion to make use of that way.

Now having found the length of the Gayne Mast in this manner for any Ship; we have set downe a Table of the lengths and thickness of all the Mastes and Yards of the Ship we have propounded: by meanes whereof, after the length and thickness, at the partners of the Gayne Mast so; any Ship is found. The lengths and thickness of all the other Mastes and Yards may be found by our Table as followeth: Suppose a Ship 63 foote by the the Keele, 25 foote breadth at the beame, and 11 foote deepe in hold, we desire to know the length and the thickness of all the Mastes and yards; and first for the Gayne Mast, the breadth at beame 25 foote, the depth 11 foote, their Sum 36. their double 72. which divided by 3 the quotient is 24 Yards, the length of the Gayne Mast, which is 72 foote. To finde the lengths and thickness of all the other, you may doe it by the Rule of Three, the lengths in fute and the thickness in inches, and the proportion is from the lengths and the thickness of the Masts and Yards, for they are but a lineall proportion: That is;

As 8, the length of our Gayne-mast in the Table is to 72, the length of the Gayne-mast found so is 28, the thickness of our Gayne-mast in the Table to 24. the thickness of the Gayne-mast found at the partners; the thickness of the Diameter at the bowes must be 2 two third parts of that which it is at the partners which in this, is 16 inches thickness of Diameter. Of this proportion of the lengths of the Mastes may be abbreviated, for it is as 7 to 6. so is 28 to 24. and so we may proceed to finde all the rest, as 7 to 6 so is 75 our foremast to 74. the length of the foremast required; and so we may proceed for all the other lengths and thickness both of the Masts & Yards: but because this is some-what troublesome, and every one is not able to worke the Rule of Three in numbers, we have considered of a more easie and speedy way for the performing of it, which is, by an opening scale, having two lines drawne, one on each side from the center, each line divided into 150. parts: and each part into two parts, whose use is thus. take 72 from the Center on one side of the scale in your Compasses the length of the Gayne-mast found, and put it over in

84 and 84 the length of our Spaine-mast in the Table, and keeping the scale still at the same distance without altering it take the distance over with your compasses betwixt 28 and 28 the thickness of our Spaine-mast in the Table, and measure it on the side of the scale from the center, and it will end in 24. the thickness of the Spall sought; and take it over in 75. the length of our fore-mast and it will end in 64 the length of the fore-mast required, and take it over in 23. the thickness of our fore-mast and it will end in 21. the thickness of the fore-mast required, and in 74. the length of our Spaine-yard in the Tables, and it will end in 63. the length of the Spaine-yard required, and in 24. for the thickness and it will end in 21 the thickness required: and so proceed for all the rest of the lengths and thickness without altering the scale, and you shall finde 36 the length of the bowsprit and 19 thickness, and 53 the length of the fore-yard, and 17. the thickness, and 44 the length of the Mizzen-yard and 13 thickness, and 45 the length of the Mizzen Mast, and 15 the thickness, and 43 the length of the Spritsail yard, and 14 the thickness, and 36 the length of the maine Top-mast, and 12 the thickness, and 31. the length of the fore Top mast, and 11 the thickness, and 31 the length of the maine Top-saile, and Crossieck yards, and 9. the thickness of the maine Top-saile yard, and 6. the thickness of the Crossieck yard, and 27 the length of the fore Top-saile yard and 7. the thickness, and 23. the length of the mizzen Top-mast, and 6. the thickness, and 18. the length of the maine Topgallant mast and 6 the thickness, and 17. the length of the mizzen Top-saile yard, and 4. the thickness, and 17 the length of the fore Topgallant mast, and 5 the thickness, and 16 the length of the main Topgallant yard, and 5 the thickness, and 14. the length of the fore Topgallant yard, and 4. the thickness, and 14. the length of the Spritsail Top-mast, and 4. the thickness, and 12 the length of the Spritsail Top-saile yard and 3. the thickness: By this meanes we have performed the finding the lengths and the thickness of all the masts and yards belonging to our supposed ship of 63 foote by the keele, 25 foote by the beame, and 11

foote deepe in hold, with wonderfull ease and speed, barged-ly; and now we will goe forwarde, first to finde the sizes of our Rigging: secondly, to finde the quantitie of Ropes of each size that will serue our turne to rigge the Ship compleatly: and thirdly, to finde the length of each Rope, that we shall have occasion to make use of. in Rigging: all which shall be performed with as much ease and speed as the former was for the masts and yards, (number for number.) Here note by the way, that we could have giuen the lengths of all the masts and yards by proportions from the length of the maine mast, and so from one to another, but because our way that we have proportioned is far more easie and speedy in performance, I rather make use of it, then of the other way.

Now first so: the sizes of our Rigging wee are to consider that it is but a lineall proportion betwene the Diameter of the maine mast in our Table, and the Diameter of the mast found, which proportion is, being abbreviated, as 7 to 6. so is one inch one tenth part the smallest Cordidge in our Table, to nine tenths of one inch our smallest Cordidge for our supposed ship of 63 foote by the hale: and here we are to note that it is the circumference of the Cordidge that we find, all which is performed without altering the scale, but let it remaine at the same opening it was at, to finde the lengths and thickness of the Bales and Yards. As for the smallest Cordidge of one inch, and one tenth part, take the distance over betwene 11 and 11, which measured from the center will read in 9. and more almost one halfe, which is 9 tenths of one inch, & then put it over in 13 and 13: for our second size Cordidge of one inch and $\frac{1}{10}$ in our Table, which measured from the center will end in 11, which is one inch, and one tenth part for our second size, for our supposed ship, and so proceeding on in the same manner for all the rest of our sizes, taking for one inch, and $\frac{1}{10}$ parts 18 and for two inches and $\frac{1}{10}$ parts 22. and for 2 inches $\frac{1}{5}$ parts 26. and for 3 inches $\frac{1}{5}$ part, 31 and so in like manner for all the rest, and taking for 14 inches, 40.

But here it may be objected that the greatest Cordidge in our Table is but 14 inches, and the extent of our scale is but

to 150. how then shall we do if we were to fit a Ship, whose Rigs of Cordidge would goe beyond the end of our scale: To which I answer, it may be done three wayes: first, it may be done by the Rule of Three in numbers, or else, secondly, (which is more pertinent to our way of performing) by the scale, which is this, I have a Ship to be Rigged, the thickness of whose Spaine-mast at the partners is 35 inches, I demand the size of the maine stay, the size of the maine stay in our Tables is but 14 inches, this that we seek for must be more, the proportion betwene the thickness of the Spaine is as 38 to 35, which is as 4 to 5. In this case because our scale goes but 150. we take the distance over betwene 70 and 70. which is halfe the size of our maine stay and measure it from the center, and it will end in 87½ that is halfe the circumference of the Spaine stay required, which being doubled is 175. that is 17 inches and one halfe, the circumference of the maine stay required.

A third way by the scale, we may take the distance over betwene 14 and 14, as the scale is numbr'd, which measured from the center, will end in 17½ the size of our maine stay required.

But to goe so;wards to find the rest of the sizes of the Cordidge for our supposed Ship of 63 foote by the keele.

For our Cordidge of one inch $\frac{1}{16}$ in our Table, we shall find by the scale one inch $\frac{1}{16}$ parts, and so; 2 inches $\frac{1}{16}$ parts, we shall find one inch $\frac{2}{16}$ parts, and so; 2 inches $\frac{2}{16}$ parts, we shall find 2 inches $\frac{2}{16}$ parts, and so; 3 inches $\frac{1}{16}$ parts, we shall find 2 inches $\frac{3}{16}$ parts, and so; 3 inches $\frac{1}{16}$ parts, we shall find 3 inches $\frac{1}{16}$ parts, and so; 3 inches $\frac{1}{16}$ parts, we shall find 3 inches $\frac{1}{16}$ parts, and so; 4 inches $\frac{1}{16}$ parts, we shall find 3 inches $\frac{4}{16}$ parts, and so; 4 inches $\frac{1}{16}$ parts, we shall find 4 inches $\frac{1}{16}$ parts, and so; 5 inches $\frac{1}{16}$ parts, we shall find 4 inches $\frac{5}{16}$ parts, and so; 5 inches $\frac{1}{16}$ parts, we shall find 4 inches $\frac{5}{16}$ parts, and so; 6 inches $\frac{1}{16}$ parts, we shall find 5 inches $\frac{1}{16}$ parts, and so; 6 inches $\frac{1}{16}$ parts, we shall find 5 inches $\frac{1}{16}$ parts, and so; 10 inches $\frac{1}{16}$ parts, we shall find 9 inches $\frac{1}{16}$ parts, and so; 14 inches we shall find 12 inches $\frac{1}{16}$ parts: so now we have sized all our Cordidge for our supposed Ship of 63 foote by the keele,

so;

For Rigging proportionable to the size of the Cordidge in our Table.

The second thing concerning the Cordidge is to find what quantitie of each size will serve to rigge our supposed Ship of 63 saite by the keele. You may see in our Table we have set downe the Sum of the number of Fathomes of each size at the end of conclusion of the size, as for the first size of one inch and one tenth parts the Sum is 232. Fathomes; but because this number is greater then the length of our scale, we take the tenth part of it, and so we take it over between 23 and 232. the scale remaining still at the same angle, opening it was, at the first, and measuring it from the center, it will end in very nere 20. which being againe increased 2 multiplied by 10. it will be 200 Fathome for the Cordidge of the least size, to rigge our supposed Ship compleatly.

For our second size which in our Table is 69. Fathome, we shall find 59. which is 590. Fathome, and for our third size which is in the Table, 351. Fathome, we shall find 30. which is 300. Fathome, and for our fourth size which is in the Table 838. Fathome, we shall finde 71. which is 715. Fathome, and for our fifth size, which is in the Table, 728. Fathome, we shall find, 62. which is 625. Fathome, and for our sixth size, which is in the Tables, 764. Fathome, we shall find 65. which is 655. Fathome, and for our seventh size, which is in the Tables, 367. Fathome, we shall find 31. which is 315. Fathome, and for our eighth size which is in the Tables, 85. Fathome, we shall find 72. which is 72. Fathome, and for our ninth size which is in the Tables, 168. Fathome, we shall find, 144. which is 145. Fathome, and for our tenth size, which is in the Tables, 182. Fathome, we shall find 15. which is 155. Fathome, and for our eleventh size which is in the Tables, 220. Fathome, we shall find 19. which is 190. Fathome, and for our twelfth size, which is in the Tables, 232. Fathome, we shall find 20. which is 200. Fathome, and for our thirteenth size, which is in the Tables, 321. we shall find 27. which is 275. Fathome, and for our fourteenth size, which is in the Tables, 43.

Fathome

Fathome, we shall find 37: which is 37. Fathome, and for our fifteenth size, which is in the Tables 23. Fathome, we shall find 20. which is 20. Fathome, and for our last size, which is in the Tables 16. Fathome, we shall find 14. Fathome.

But here it will be objected, that in our Tables we have put downe too much variety of Rigging, and that there is not so much required for every ordinary ship: for answer whereunto, and what course to take, where any man is not disposed to have his ship so compleatly Rigged, as we have propounded, goe to the Tables, and take out the numbers, that are against the Cordidge of every Size, that you intend to make use of, and adde the numbers together, then take over the distance in your Compasses from the scale, of the whole Sum, or the tenth part as you have occasion, as is before directed, and measure it from the center, & you shall see the number of Fathomes required of that size, although you rigge not your ship so compleatly as we have propounded, alwayes remembering the Scale must remaine still at the same opening it was, at the first.

Example.

Suppose our supposed ship of 63. scote by the keele, it being winter, should not be Rigged with Topgallant masts, nor with spizon, nor Spittsaile Topmastes, then we would know how many Fathome of our fourth size Cordidge will serve our turne; we goe to our Table of 2 inches $\frac{2}{3}$ parts, and take out the numbers against all the other Cordidge, (leaving out that which is for the Topgallant masts, and for the mizon, and Spittsaile Topmastes) and adde them together, and the Sum is 590. of which I take the tenth part, which is 59. Then I take over the distance with my Compasses upon the scale, betwene 59 and 59, and measure it from the center, and it ends in 50 $\frac{1}{2}$ which is 50 $\frac{1}{2}$. Fathome of Cordidge of our fourth size of one inch, $\frac{2}{3}$ parts, which was the size we found for 2 inches $\frac{2}{3}$ parts, as you may see before.

As to proceed to the finding of each particular Cordes length, there is no more difficultie in it then there was in the finding of the whole number of Fathomes of each size, but for
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the better explying of it we will set downe some examples of some Cordes that the rest may be found by them without any Scruple.

Example.

We desire to know the length of our maine Topsaile Baces for our supposed ship of 63. fote by the keele, looking in our Table we find them in our third size of 1 inch, $\frac{1}{2}$ parts, and their length double is 48 fathome (note in our Table every Cord that is double is put downe, single and double, with f. a. at the top of each signifying fathomes;) so I take over the distance with the Compasses upon the scale over betwixt 48. and 48. which measured from the Center shall end in 41. that is 41. fathome, for the length of our maine Topsaile Baces double, for our supposed ship of 63. fote by the keele, and so if we looke for our fore Topsaile lifts, we shall find them to be in our Table of Cordidge of 2 Inches $\frac{1}{2}$ parts, 36. fathome, and for our supposed ship we shall find them to be 31. fathom, and for our Topsaile Cuelines in our Table of 2 Inches $\frac{1}{2}$ parts, we shall find 60 fathome, which for our supposed ship we shall finde to be 51. fathome, and for our fore lifts, which in our Table is 40 fathome, we shall find them for our supposed ship to be by our scale 34 fathome, and for our maine Topsaile halliards, in our Table we shall find 44. fathome, which for our supposed ship by our scale we shall find to be 37 fathome, & for our utaine bowlings in our table is 34 fathom, which we shall find by our scale to be 29 fathome, & for our fore halliards in our Table is 30. fathome, which we shall find by our scale to be 26. fathome.

Thus we have exemplified in the finding of the lengths of some particular Cordes, which is instruction sufficient for the finding of the lengths of all the rest, and so we suppose we have performed all that we promised to performe with ease & ease by a scale, for the Compleat Rigging of any ship, & now we will proceede to set downe some other propositions & Cordidge that are necessarily required in a ship, & so we will conclude this Tract.

A Table of some other Cords and Ropes

that are of necessity in a ship, and are here put downe
for their lengths and sizes according to our
former Table of Cordidge for our pro-
pounded ship.

	Fa.	Fa.
2 Stoppers at the Bitts of 5 inches	4	8
2 Lanniards of 2 inches	5	10
2 Stoppers at the Bough of 3½ inches	6	12
4 Shank Panter of 3½ inches	2½	10
1 Shank Panter for the Streame Anchor 3 inches	2½	2½
1 Stopper for it of 3 inches	2½	2½
2 Can Buy Ropes of 3 inches	50	100
For Robins and Earins of 1½ inch. 1 female coile.		
4 Lead lines		
2 Cat Ropes of 3 inches	2½	5
1 Pennant of the fish Takle 4½ inches	4	4
1 Fall of the fish Takle 2 inches	12	12
1 Long Boats Davides seizing 3 inches	2	2
1 Long Boats Panter 4 inches	3	3
1 Pinnesses Davides seizing 2½ inches	2	2
1 Pinnesses Panter 3 inches	3	3
1 Jellewatts Panter 2 inches	2	2
1 Hosles for the head 3 inches	4	4
1 Ladder for the Boufsprite 2½ inches	8	8
Lanniards of 1 inch	4	4
1 Buy Rope for the Streame Anchor 3 inches	9	9
1 Buy Rope for the Kedg Anchor 2 inches	9	9
2 Paire of Butt slings 3 inches	2	2
2 Paire of Hogthead slings 2 inches	2	2
1 Ladder for the Poope 3 inches	8	8
6 Winding Takle Blocks		
3 Buy Ropes of 4 inches	10	30
For new Bolt Rope 4 inch Cablet.		
A Guesse Rope 3 inch Cablet.		
Cackling of 2½ or 3 inches.		

You are to take notice that these last Cordes and Ropes are sized and their lengths are proportioned according to our Ship that we have propounded of 75 fote by the Rule, for which our former Tables are made. Now it remaines that we speake somewhat of the sizing of Cables.

Your Great Cable is commonly so many halfe inches about as your Ship is breadth in fote at the midship Beame.

Now our propounded Ship to which our Tables are made is $29\frac{1}{2}$ fote at the midship Beame, therefore the Great Cable must be 15 inches about, and to finde the sizes of the rest of your Cables, you may do it by the weight of your Anchors in this manner.

Suppose your Great Anchor be 15 hundred weight, and your Cable 12 inches, and you have another Anchor 9 hundred weight, you desire the size of your Cable for it.

For the answer to this and the like demands, I have caused two lines to be put downe on the side of the scale; the one of equall parts containing 385 parts, and the Tens and Fives written out, and it is numbred at every 50, thus, 50, 100, 150, &c. The other line of unequall parts begins at 1, and ends at 100, and is numbred to every unite, and each unite is divided from five to tenne by fives, and from tenne so by tens, each unite into ten parts.

First I take 9 upon the opening scale from the center, the weight of the second Anchor, and put it over in 15, and 15, the weight of the first Anchor, and keeping the scale so, I looke against 12 in the unequall parts, and in the equall parts against it are 72. then I take the distance over upon the opening scale betwene 72, and 72, and measure it from the center, and it ends in $43\frac{1}{2}$. Lastly, I looke $43\frac{1}{2}$ in the equall parts, and against it in the unequall parts is $9\frac{1}{2}$, that is $9\frac{1}{2}$ inches the Circumference of the Cable for the Anchor of 9 hundred weight which was required.

Or otherwise the Cables may be proportioned from the burthen of the Ships in this manner.

Suppose that a Ship of 300. Tuns have a Great Cable of 15 inches about, what shall be the Circumference about of the
Great

Shcate Cable of a Ship of 115 Tunnes Here becaus the greater number of Tunns is more then is upon our scale, wee take one quarter of 300. which is 75. and one quarter of 115 which is 29 next. and the proportion is all one: so I take 29 from the center and put it over in 75, and 75, and so have the scale. Next I looke against 15, in the unequal parts, and against it in the equal parts is $112\frac{1}{2}$. then I take over the distance betwene $1112\frac{1}{2}$ and $112\frac{1}{2}$ & measure it from the center and it ends in $43\frac{1}{2}$ then I looke against $43\frac{1}{2}$ and in the unequal parts, against it are $9\frac{1}{2}$ that is $9\frac{1}{2}$ inches, the circumference about of a Shcate Cable for a Ship of 115 Tunne according to the former supposition, and as it was found before; and so the sizes of all the rest of the Cables may be found from one Ship to another after the same manner.

It may be objected that the Staves of the middle masts may faile to hold in proportion according to the lengths of the middle masts in all ships, because the distance betwene the maine mast and the fore mast may not be proportionable in all ships according to their lengths, wee suppose it to be so, yet our scale performs it exactly.

Example.

In our propounded Ship of 75 fote by the keele, the maine mast 84 fote, the depth in hold 13 fote, and 5 fote betwene decks is 18 fote, which subtracted out of 84 rest 66 fote, the height of the mast above the decks; now commonly the distance betwene the maine mast and fore mast is three fifts of the length of the Ships keele, which in this ship that wee have propounded is 45 fote (and the distance of the mizon mast from the maine mast is halfe as much as the distance betwien the maine mast and the fore mast.) But to proceede, & to keep our selves within the Compasse of our scale, wee reduce the height of the mast above the decks, and the distance betweene the maine mast, and fore mast into yards, and the one is 22 yards and the other is 15 yards, these two I seek: in the line of unequal parts, and against 22 there is in the equal parts 242. and against 15 is $112\frac{1}{2}$ these two I adde together & their Sum is 354 $\frac{1}{2}$ which I seeke in the line of equal parts, and a-

gainst it in the unequal parts is $26\frac{1}{2}$, that is $26\frac{1}{2}$ yards, the length of the maine stay besides the Colles.

If it happen that the equal parts that belong to the height of the maine mast above the decks, and the distance betwene the maine mast and the foremast added together be above 38; then take the halfe of each in yards, and double the length you finde, and that shall be the length of the maine stay in yards.

Example.

The distance betwene the maine mast and foremast is 11 yards, so; which we take halfe which is $7\frac{1}{2}$ against which of the unequal parts, in the equal parts, is 28. and so; the height of the maine mast above the decks being 22 yards we take 11 against which of the unequal parts, in the equal parts is $60\frac{1}{2}$, which added to 28 is $88\frac{1}{2}$, which I looke in the equal parts against it in the unequal parts is $13\frac{1}{2}$, which being doubled is $26\frac{1}{2}$, that is, $26\frac{1}{2}$ yards, so; the length of the maine stay besides the Colles as it was found before.

Thus we have finished what was intended, so; this businesse of masting, yarding, and Rigging of any ship whatsoever. But because our Boate-swaine shall be Compleat according to our title, we will further shew by our scale to finde the weight of the Cordidge (of each size that shall serve to Rigge any ship whatsoever) as we will exemplifie it by the Cordidge of our supposed ship of 63. fote by the keele: first we are to take notice that in all our Cordidge under $2\frac{1}{2}$ inches, we are to looke the size in the unequal parts, and make it ten times as much as it is, as so; one inch and $\frac{1}{2}$ parts to looke 15; and to take halfe the number of equal parts against it, as against 15. is $112\frac{1}{2}$. the halfe is $56\frac{1}{2}$ and alwayes take 50. from the center, and put it over in the said halfe of the equal parts, then take the distance over in $87\frac{1}{2}$. and $87\frac{1}{2}$ and measure it from the Center, and that shall be the number of fathomes of that Cordidge that weighes one quarter of one hundred weight.

Example of our third size so; our supposed ship of 63 fote by

by the Rule, which size is one inch $\frac{4}{7}$ parts, taking for it 16. as is before said, and looking it in the unequal parts, there is against it in the equal parts 128. the halfe is 64. When I put over 50. in 64. and take the distance over in $8\frac{1}{2}$. and $8\frac{1}{2}$. and measure it from the center, & it ends in 68. that is, in 68 fathom of that Cordidge to weigh one quarter of one hundred weight; so then I take 28 from the center the number of pounds in one quarter of a hundred, and put it over in 68, then I take the distance over betwene 30, and 30, the tenth part of the summe of the Cordidge of the third size, and measure it from the center and it ends in $12\frac{1}{2}$, which multiplied by 10, is 123 pound, the weight of 300 fathome of our Cordidge of 1 inch $\frac{4}{7}$ parts, which is our third size.

For Cordidge betwene $2\frac{1}{2}$ inches and 5 inches take the one halfe of the size, and do with the halfe as in the last, onely at the last take the distance betwene $4\frac{1}{2}$ and $4\frac{1}{2}$ and measure it from the center which shall be the number of fathomes in halfe one hundred weight, or if you take it betwene $8\frac{1}{2}$ and $8\frac{1}{2}$ it shall be the number of fathomes in one hundred weight. Example of our seventh size Cordidge for our supposed Ship which is 3 inches, the halfe is 1 inch $\frac{1}{2}$ parts, for which we take 15 in the unequal, and in the equal parts against it 112 the halfe is 56: so I put over 50. in 56, and take the distance betwene $4\frac{1}{2}$ and $4\frac{1}{2}$, which measured from the center shall end in 39, that is 39 fathome to weigh halfe one hundred weight of 3 inch Cordidge, so I put over 20 for 2 quarters in 39, and then I take the distance over betwene $31\frac{1}{2}$ and $31\frac{1}{2}$ for 315 fathome, the whole Sum of that Cordidge, which measured from the center shall end in 16. that is 16 quarters of one hundred weight, that is four hundred weight for the quantitie of that Cordidge. For Cordidge above 5 Inches to find the weight and what quantitie of that; we must seeke the size of that in the unequal parts, as it is, and take the equal parts against it and put over 20 in it, then take the distance betwene $8\frac{1}{2}$ and $8\frac{1}{2}$ and measure it from the center and it shall end in the number of fathomes that weigheth halfe one hundred weight. Example of our fifth size which

which is 9 inches & is 20 fathome, againe 9 of the unequal parts in the equall parts is $40\frac{1}{2}$ I put over 20 in $40\frac{1}{2}$ and take the distance betwien $87\frac{1}{2}$ and $87\frac{1}{2}$ which measured from the Center ends in 43. that is 4 fathome, and $\frac{1}{2}$ of that Cordage to weigh halfe one hundred weight: Then I put over 20 for 2 quarters in 43. and take the distance over betwiane 20 and 20 the number of fathomes of that size, and measure it from the center, and it ends in 9, that is 6 quarters and one thirde part of 2 hundred one quarter and 9 pound so: the whole quantitie of that Cordage. This which is exemplified in these three particulars is sufficient instruction for all the rest, and now having made (in regard of instruction) our Boate-Swaine Compleat, we leave it to his practice and so conclude.

FINIS.



